

The background of the entire page is an abstract architectural wireframe. It features a complex network of thin, light blue lines that form a three-dimensional grid of rectangular prisms and cubes. These shapes are arranged in a way that creates a sense of depth and perspective, with some elements appearing closer and more detailed than others. The overall color palette is a range of blues, from very light, almost white, to a medium blue, giving it a clean, modern, and technological feel.

INNOVATE

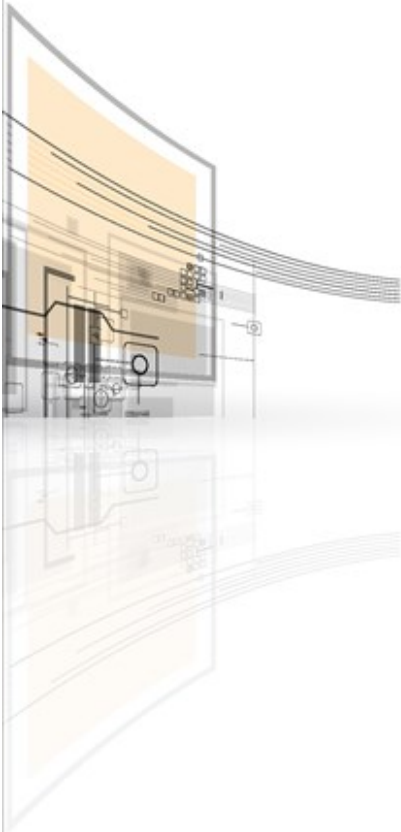
NEW BRUNSWICK INNOVATION FOUNDATION

2013-2014

ANNUAL REPORT

INNOVATION IS OUR BUSINESS.





BUILDING FUTURES.

As NBIF continues to expand, our sights are set on building an innovation-based economy for New Brunswick that thrives on its own creativity and enterprise.

At NBIF, Innovation is more than a way of thinking. **It's our business.** With our resources and support; companies, startup entrepreneurs and researchers have created over a billion dollars of value in our economy. These are our champions, and we're dedicated to helping them build a better New Brunswick for us all.

Innovation is our land of opportunity for the 21st Century.



INNOVATION
is the process
of generating,
developing and
transforming
ideas into new
or improved
products,
processes or
technologies
that generate
economic value
and are put
to use.

MESSAGE FROM THE CHAIR



DR. ROBERT HATHEWAY, CEO
THE HATHEWAY GROUP

Innovation is more than a buzzword, more than a way of thinking. At NBIF, innovation is our business.

We fundamentally believe that the road to prosperity and a better future for New Brunswick is paved with innovation. It stimulates productivity, and improves competitiveness. It's the essential ingredient of a vibrant, growing economy. To fuel innovation, we must invest in it and at NBIF we do just that.

Our investments in innovation, some of which are profiled in this *Annual Report*, are bringing together ideas, people and capital in new ways and creating new and exciting opportunities for New Brunswick. Last year, new funding from the Government of New Brunswick enabled NBIF to expand. We are better positioned than ever to accelerate innovation in New Brunswick.

Thanks to investments totaling \$60 million over a 5-year period, NBIF was able to launch several new funding programs like the New Brunswick Innovation Research Chair Program, the New Brunswick Graduate Scholarship Program, and Innovation Voucher Fund. These new programs are meeting unmet needs in the marketplace, and allowing NBIF to accelerate innovation. We were also able to augment our core offerings like the Research Innovation Fund and the Venture Capital Fund, strengthening the foundation of NBIF's mandate – bridging research to enterprise.

At the intersection of research and enterprise you will find a wellspring of innovation, an opportunity to turn research into reality, ideas into startups.

Innovation is our land of opportunity.

2013-2014 BOARD OF DIRECTORS



MIKE JENNINGS **vice-chair**
VP Business Development
Brunswick Valley Lumber



DENIS CARON **secretary-treasurer**
Deputy Minister
Economic Development



DAVID BURNS, PHD
VP Research
University of New Brunswick



ANNETTE COMEAU
President & CEO
LearnSphere Canada



LISE DUBOIS, PHD
VP Research
Université de Moncton



JILL GREEN
CEO
Green Imaging Technologies



BYRON JAMES
Clerk of the Executive Council
Province of New Brunswick



TOM MANN
Deputy Minister
PETL



RODNEY OUELLETTE, MD, PHD
CEO & Scientific Director
Atlantic Cancer Research Institute



GERRY POND
Chairman
Mariner Partners



GERRY VERNER
VP Business Development
Innovatia



BETH WEBSTER
Vice President
Populus Global Solutions



AT NBIF, all of the financial returns
on our investments
go back into the
foundation

so we can start and
grow more companies
and applied research
projects.

AT THE INTERSECTION OF IDEAS, PEOPLE AND MONEY

These are the three basic ingredients of innovation. It is when these three essential concepts intersect that true innovation emerges, and you need all three to be successful.

Ideas for improving what already exists, or for something entirely new are plentiful. Developing and implementing them requires people and access to resources they need to see it through such as money, equipment, or mentors.

When you have all three ingredients in proper proportions you get the kind of innovation that generates value and wealth that can significantly impact a business, its staff, the economy and ultimately, society.



AT THE INTERSECTION OF RESEARCH AND ENTERPRISE

There are a number of capital sources available for innovators, and accessing them depends on where their innovation is along the time line from concept to market.

Basic research generates new ideas, principles and theories that are essential for modern progress, but may not be immediately utilized. Applied research is the practical application of basic research for a specific business or client purpose.

On the research side of our business, we invest in activities like concept validation, prototype creation, and bench testing. On the enterprise side, we work to get R&D into the hands of entrepreneurs, and make investments in new startup companies.





In 2013-14, NBIF increased its annual investments in startup companies and research by 60%, our biggest year to date. As a result, our clients were able to raise \$43 million more from other capital providers.

Double what it was last year.

MESSAGE FROM THE PRESIDENT & CEO



CALVIN MILBURY
PRESIDENT & CEO

Think Big. Innovate. Grow Global. Behind every investment we make at NBIF is this three-point philosophy.

First, we believe in market-driven innovation and support ideas that address an unmet need. Second, we focus on growth opportunities and support innovators who think big and go global from the start. Third, we focus on people and the talent development,

2013-14 MANAGEMENT TEAM



ROGER GERVAIS, PHD
Vice President
Research



NICOLE LEBLANC, CGA
Director
Finance



JOANNE JOHNSON
Director
Administration



CHET WESLEY, MBA
Director
Marketing & Comms.



CRAIG MCLAUGHLIN, CA
Controller



RAY FITZPATRICK, CMA
Investment Analyst

recognizing that with the right team anything is possible. With these ingredients in mind, our team at NBIF works tirelessly to raise the bar, and accelerate innovation. Fueled by new funding, and bolstered by a growing, vibrant innovation ecosystem in New Brunswick, NBIF reached new heights in FY 2013-14.

A record \$4.2 million was invested in 33 research projects under the Research Innovation Fund, while a record 17 equity investments totaling \$2.8 million were made under the Venture Capital and Startup Investment Funds. In total, \$8.5 million was invested.

What's more impressive is that since its inception in 2003 every dollar invested by NBIF has leveraged another 7 dollars. That's a \$365 million impact! More importantly, we've witnessed first-hand a culture shift in New Brunswick. More innovation and entrepreneurship is taking root and an innovation-based economy is emerging.

With our expanded and augmented funding programs now in place, combined with the momentum that exists, I am now confident more than ever that NBIF is positioned to accelerate economic growth in New Brunswick.

INVESTMENT ACTIVITIES all funds 2013-14

Investment	2013-14	2012-13	% Change	Since 2003
Applied research	\$ 3,922,578	\$ 1,894,333	+ 107 %	\$ 20,650,780
Start-up & growth companies	3,364,110	1,950,000	+ 72 %	14,883,356
Talent & recruitment *	1,135,000	1,500,000	- 24 %	13,863,519
TOTAL INVESTED, NBIF	\$ 8,421,688	\$ 5,344,333	+ 58 %	\$ 49,397,655
Leveraged capital	43,196,045	21,375,187	+ 102 %	315,411,368
TOTAL IMPACT	\$ 51,617,733	\$ 26,719,520	+ 93%	\$ 364,809,023

* NBIF and PETL's \$500,000 Research Technicians Initiative is every two years. 2013-14 is the off year.

An abstract graphic featuring a grid of orange and grey squares of varying sizes. A network of thin grey lines connects these squares, with several lines extending horizontally and vertically across the page. Two text blocks are integrated into the design: one in the upper left and another in the lower right.

Twelve of 36 NBIF-backed companies
have emerged from NBIF-funded
research. Those spin-off companies are
now selling their products and services
all over the world, in fact...

over 75% of revenues
generated by all of our
companies is from export
sales.

OUR CORPORATE OBJECTIVES

As an independent, not-for-profit corporation, part of NBIF's success comes from its ability to syndicate with both private and institutional investors and the business community.

One of NBIF's major roles is to act as a capital market catalyst. To do this, NBIF consistently syndicates its investments with other venture capital firms, angel investors and networks. Even though NBIF can and does invest in some companies on its own, its aim is to mitigate financial risk by partnering with other investors. On the applied research side of our business, we aim to do the same through industry collaborators and national granting councils and agencies.

CREATING NEW ENTERPRISES

NBIF supports the creation and development of new ventures by offering equity capital, professional support, and networking opportunities to entrepreneurs that focus on innovation.

FUNDING APPLIED RESEARCH

NBIF supports applied research by funding projects that show potential for commercialization and economic impact on the province, its universities, community colleges and research organizations.

RECRUITING & DEVELOPING TALENT

NBIF supports the recruitment and development of outstanding researchers and entrepreneurial leaders by providing them with the funding, expertise and recognition they need to succeed.

LEVERAGING R&D FUNDING

NBIF works to increase the total infusion of research funding by investing in projects that unlock contributions from industry and national agencies, like the Canada Foundation for Innovation, NSERC, CIHR, NRC and more.

GROWING CAPITAL MARKETS

NBIF works to grow the province's capital markets by attracting investments from other capital and industrial partners, both inside and outside of New Brunswick and Canada.

TARGETING STRATEGIC INDUSTRIES

To be eligible, all projects and business proposals must fit within one of our strategic industries, namely ICT, Energy & Environment, Biosciences, Value-added food & wood, and advanced fabrication.



Click the video or camera icon to watch this content

Did you know that the snow blower was invented in New Brunswick? In Dalhousie in the late 19th century. Click on this 30-second video to see the innovators of today, and why we're looking for the innovators of tomorrow.

Since inception, NBIF has invested over \$14 million in new start-up companies in New Brunswick, leveraging over \$107 million from other sources.

That's \$9 for every \$1 we invest.



OUR PRIVATE SECTOR ACTIVITIES



NBIF reached a peak in 2013-14, completing 17 equity investments, 8 expanding 4 of our existing companies and while adding 9 new ones. Our total investment of \$2.8 million allowed our companies to raise another \$8.5 million.

FOURSUM is an application for golfers, that enhances the way players experience and enjoy the game. Based in Moncton, the start-up company's mobile app includes in-game scoring, game analysis, GPS for distance calculation, social gaming, leader boards and the ability to earn, wager and redeem virtual points. The company has signed thousands of users and sealed a co-marketing deal with one of the world's largest sporting equipment and apparel brands, including Cobra Golf.

SMART SKIN TECHNOLOGIES

continues to focus its growth on the bottling industry with its unique, pressure-sensitive bottle drone and analytical software. Now used by several of the world's largest beverage companies, its equipment senses and reports where pressure points may lead to beverage container breakage and down time. Doubling its staff in the last 24 months, including a Germany-based EU sales manager, NBIF doubled its investment in the company with an additional \$250,000.



Health management information system (HIS) provider **POPULUS GLOBAL SOLUTIONS** also saw an increase in investment of \$135,520. Now established in three Caribbean nations, the company won an international bid to provide a new HIS for Barbados in 2014. The company's solution continues to receive support from the World Health Organization and the United Nations, and is implementing strategies to expand its reach into larger countries.



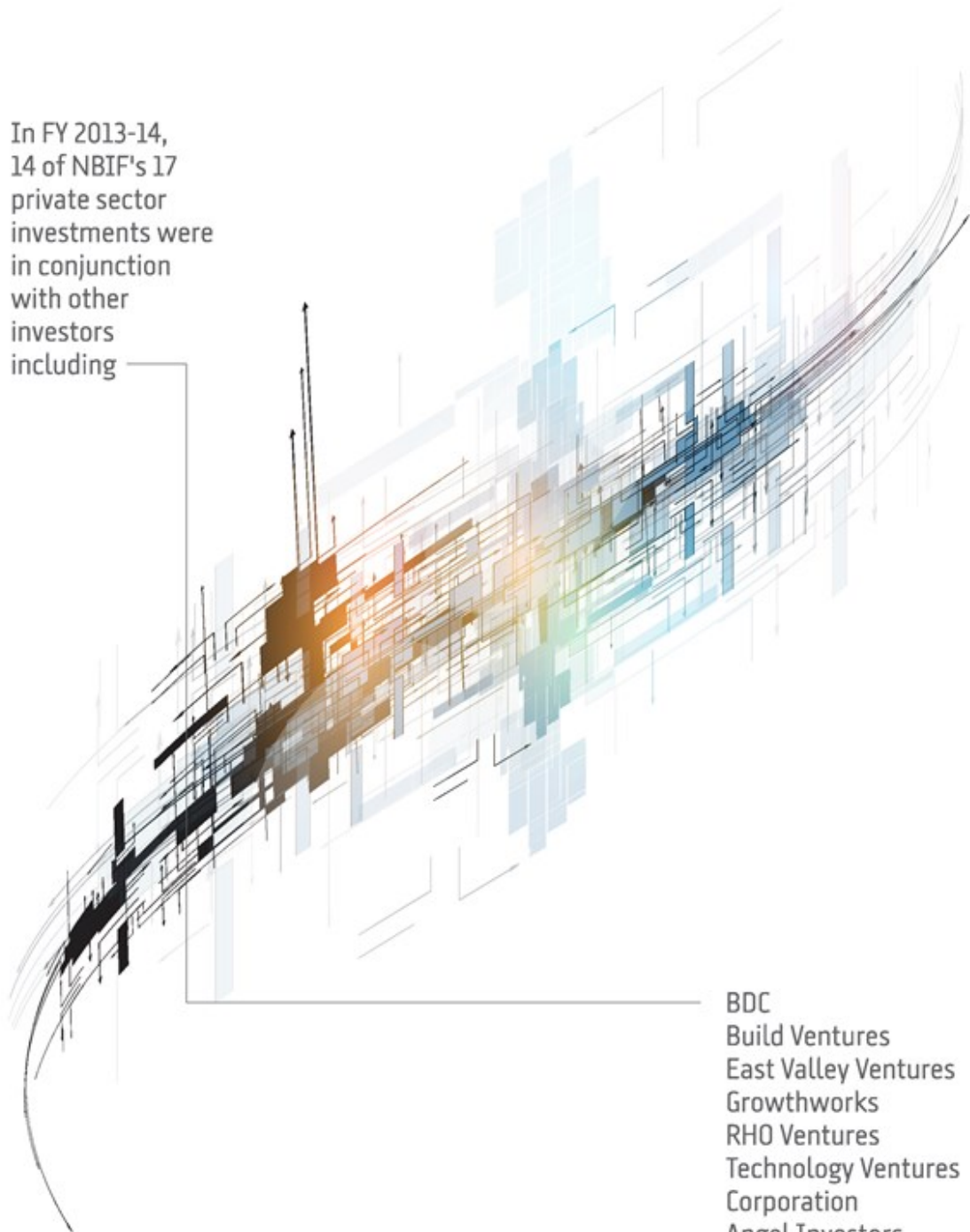
ALT GHORBANI, CEO
NEW INVESTMENT
ARA LABS
\$250,000

Every year, Malware affects more than 95% of the world's Global 5000 companies costing the world economy approximately \$1 trillion. **ARA LABS'** technology detects, reports and mediates malware and bot-net activity across the Internet in real-time.

What is unique about Ara Labs' solution is its ability to detect infections without internal access to an organization's network. Instead, Ara Labs scans the Internet to detect and pinpoint both the IP address and geographical location of a bot-net or malware infected computer. NBIF syndicated its investment with Technology Ventures Corporation, for a capital infusion totaling \$500,000.

Ara Labs is now working with a number of Fortune 500 companies and Internet service providers (ISPs), and in January 2014 signed a deal with the Government of New Brunswick to make it the first bot-net and malware secure jurisdiction in Canada.

In FY 2013-14,
14 of NBIF's 17
private sector
investments were
in conjunction
with other
investors
including



BDC
Build Ventures
East Valley Ventures
Growthworks
RHO Ventures
Technology Ventures
Corporation
Angel Investors



Productivity company **XIPLINX TECHNOLOGIES** also received additional investment in the amount of \$250,000 to help accelerate its 2014 growth plan. Now in its second year of operations, the company has ten corporations on board with its cloud-based production worker input and compliance application. Xiplinx's solution allows production managers to remotely monitor and improve the overall quality of

workforce productivity and effectiveness across multiple processes and locations.

In the wake of new business with **Volkswagen's** Canadian division and **Dyson**, NBIF invested another \$100,000 in **ZAPTAP**. The company's iBeacon and near-field communication (NFC) chips allow consumers to wave their mobile device across a small tag to receive branded content and information in an instant. Retail companies and manufacturers can collect and analyze data about the consumer's use of that content, including the ways they social share with others and more.

LiveOps, Inc., the global leader in cloud contact center and customer service solutions, acquired our **USEREVENTS** and its flagship product

iCxEngage, a contextual routing engine that can aggregate and process events on any social, web, mobile or voice channel in real time. The acquisition allowed NBIF to exit its original \$250,000 investment with a very positive return, which due to the terms and conditions of LiveOps acquisition remain undisclosed.

The employees continue to work for LiveOps in Fredericton as part of California company's research and development network.

NBIF doubled its investment in **CYBERPSYC SOFTWARE** in 2013-14 with an additional \$100,000. The company's Conquer Anxiety Pro Software suite for corporate human resources services is now available to 300,000 employees with a potential to reach 1.2 million in 2014.

Finally, **BREVIRO CAVIAR** received an additional investment of \$50,000.

VENTURE CAPITAL FUND Portfolio of Companies 03:31:2014

 Explore company hyperlinks in this table

Company	Product and Technology	Investment *
Atlantic Hydrogen	Removing carbon from natural gas before combustion	\$ 1,000,000
Breviro Caviar	Land-based short nose sturgeon caviar production	550,000
Inversa Systems	Proprietary diagnostic imaging system for industrial infrastructure	525,000
Agora Mobile	Software for developing mobile apps that work on all devices	500,000
Encore Interactive	Live Everywhere™ Internet TV system for broadcasters	500,000
RtTech Software	Software that boosts industrial efficiency and productivity in real time	500,000
Smart Skin Technologies	A unique pressure sensitive system that translates touch into data	500,000
Advanced Publishing	Digital publishing solution for online content providers	400,000
Populus Global Solutions	National-level health services management information system	371,000
KnowCharge	Electro-conductive paper for protective packaging	350,000
Xiplinx	Software for analyzing production worker activity & compliance	350,000
Zaptap	On-demand mobile marketing services for retailer and brand clients	350,000
Ara Labs	Cyber security software for detecting and eliminating bot nets	250,000
Foursun	Multi-function mobile app for golf score-keeping and social sharing	250,000
Introhive	Solution that finds relationships within companies that improve sales	250,000
Enovex	Energy saving industrial gas separation tech for heavy industry	250,000
Geode Technologies	Fleet tracking using mobile devices	200,000
CyberPsync Software	Virtual reality software for treatment of phobias	200,000
R17 Solutions	E-commerce online transaction speed optimization solutions	200,000
Select Bidder	B2B online auction system for used car wholesalers	200,000

TOTAL INVESTED, NBIF

\$ 7,696,000

* The amount reported for each investment represents its acquisition cost



The autumn of FY
2013-14 saw the
establishment
of our new \$5
million Startup
Investment
Fund providing
entrepreneurs up
to \$100,000

to prepare their
product or service for
launch.



THE TWO ANDRÉS NEW INVESTMENT FOOD TENDER \$100,000

ONE OF THE BIGGEST PAIN POINTS for today's restaurant owners and chefs is sourcing and ordering their supplies. Faced with hundreds of pages of non-standardized price tables and forms from multiple distributors, a great deal of time, effort and frustration is spent, often after hours, to get their orders submitted on a—wait for it—fax machine. **FOODTENDER** is an online solution that allows restaurants to submit part or all of its order at once. Multiple food and

supplies distributors can then make price bids on each of the items. When the process is complete, buyers can go through their order on-screen and choose which company they want to supply each item. Foodtender then automatically compiles, completes and sends the order to the various suppliers.

Food suppliers can also use the platform to offer its customers special promotions.

Food Tender was co-founded by André Pellerin, a former restaurant owner, and André LeBlanc, a chef, who both previously worked for the food distribution industry as well.

The company is located in Shediac, New Brunswick.

If you've ever received a parking ticket because you forgot to feed your meter **HOTSPOT PARKING** is the



TICKETS NO MORE NEW INVESTMENT HOTSPOT \$100,000

answer. A mobile phone app, users can pay for parking and with a text message near expiry, top-up the meter.

Merchants can also use it to geo-target and push special promos as customers near their location, and remotely pay for their parking.



See what chefs are saying about Foodtender.com



Watch how Hotspot parking works and how to get it.



STARTUP INVESTMENT FUND† Portfolio of Companies 03:31:2014

Explore company hyperlinks in this table

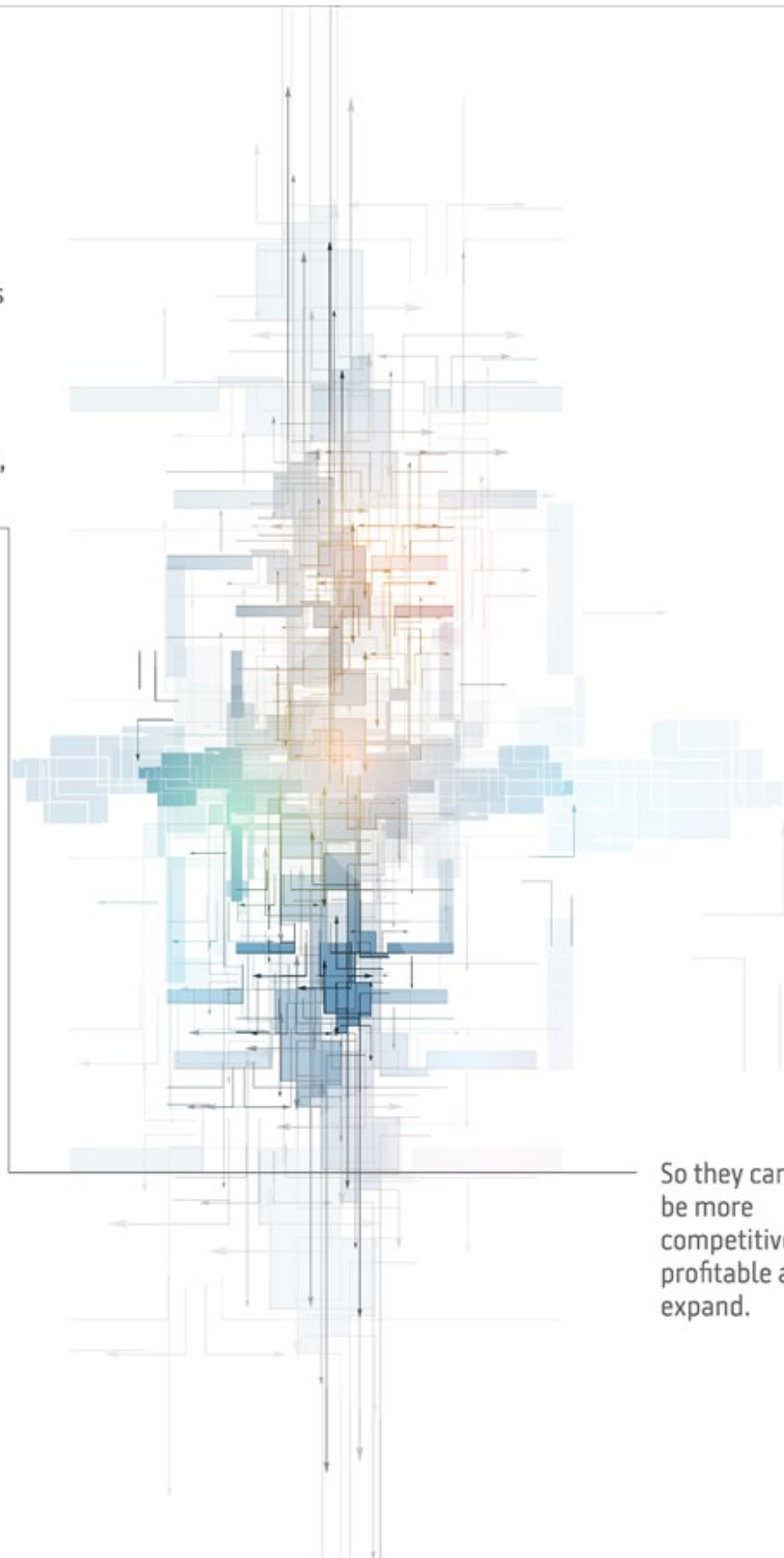
Company	Product and Technology	Investment *
ChemGreen Innovations	Non-toxic plastic polymer production process	\$ 100,000
Scene Sharp Technologies	Motion sensing and object identifying camera technology	100,000
Spinzo	Online group buying marketplace using dynamic pricing	100,000
Total Pave	Smart phone software solution for optimization of road construction	100,000
Eigen Innovations	Thermal sensors and software for production line improvements	100,000
Food Tender	Online bidding and purchasing platform for food service buyers	100,000
HotSpot Parking	Mobile app for metered parking payment and local business promotions	100,000
Flixel Photos	Smart phone and desktop app for making Cinemagraphs™	50,000
Trapster	Software for tracking and monitoring of lobster and fish catches	50,000
Legacy Lane Fiber Mill	Micro fiber milling process and operation	25,000

TOTAL INVESTED, NBIF

\$ 825,000

† Investments other than Eigen Innovations, Food Tender and Hot Spot Parking are listed as part of NBIF's former Seed Investment Fund.
* The amount reported for each investment represents its acquisition cost.

NBIF's new
Innovation
Voucher Fund
provides SME's
up to \$80,000
to conduct
R&D leading
to a new or
better product,
process or
technology



So they can
be more
competitive,
profitable and
expand.



Our Innovation Voucher Fund provides companies with unprecedented access to the scientific expertise and laboratories NBIF has helped to build so they innovate and grow.

To expand our role as a catalyst for innovation, we realized that we needed to include already-established businesses into the innovation ecosphere. With the introduction of the **Innovation Voucher Fund**, NBIF is funding innovation inside

established companies for the first time in its history.

Companies that have an idea for a new or improved product or technology can apply to NBIF, who will work to find the scientist, engineer or research laboratory they need to get started.

Funding can be used for activities such as concept validation, product or industrial design, prototypes, and scientific testing required by various markets and regulatory authorities.

Two of the most attractive features of the IVF are 1.) all intellectual property developed during the project remains the property of the company, and 2.) the company is not required to pay back our contribution.

To qualify, companies must make a 20% cash contribution to the project.

Help us encourage more SME's to incorporate innovation into their business strategy by telling people about the IVF.



HURDON HOOPER
MAKING USED RUBBER NEW
RUBRECO INC
\$76,000

Most used rubber tires are re-purposed into low cost materials such as gravel or coal substitutes. Used rubber cannot be used in new products that require virgin rubber. **Rubreco's** equipment and process devulcanizes rubber and prepares it for use by high quality rubber product manufacturers, including tire makers. Rubreco is working with RPC to expand the scale of its commercial production.

INNOVATION VOUCHER FUND R&D Collaborations 03:31:2014



Explore company hyperlinks in this table

Company	Laboratory	Product and Technology	Investment *
Aquaculture Vet Services	RPC	Feed-based treatment for sea lice to replace bathing methods	\$ 80,000
Breviro Caviar	RPC	Developing processing methods to optimize quality	80,000
Les Industries Corriveau	CCNB	Design and fabrication of a micro-malter for making gluten-free beer malt	80,000
North Taste Flavours	CZRI	A new seafood concentrate from salmon viscera for food industry	80,000
Rubreco	RPC	Used rubber devulcanization process optimization for production	76,000
A Acadien Atlantic	CZRI	Higher value products from supplier salmon heads and tails	64,212
Corruven Canada	UNB	Mechanical tests and measured uses for its lightweight wood panels	40,000
Screening Devices Canada	UNB	Required laboratory tests for its thyroid screen for U.S. FDA approval	40,000
Confection 4th Dimension	CCNB	Novel automated machinery for sewing waistbands in trousers	38,500
TOTAL INVESTED, NBIF			\$ 578,712
Company contributions			144,678
TOTAL IMPACT			\$ 723,390

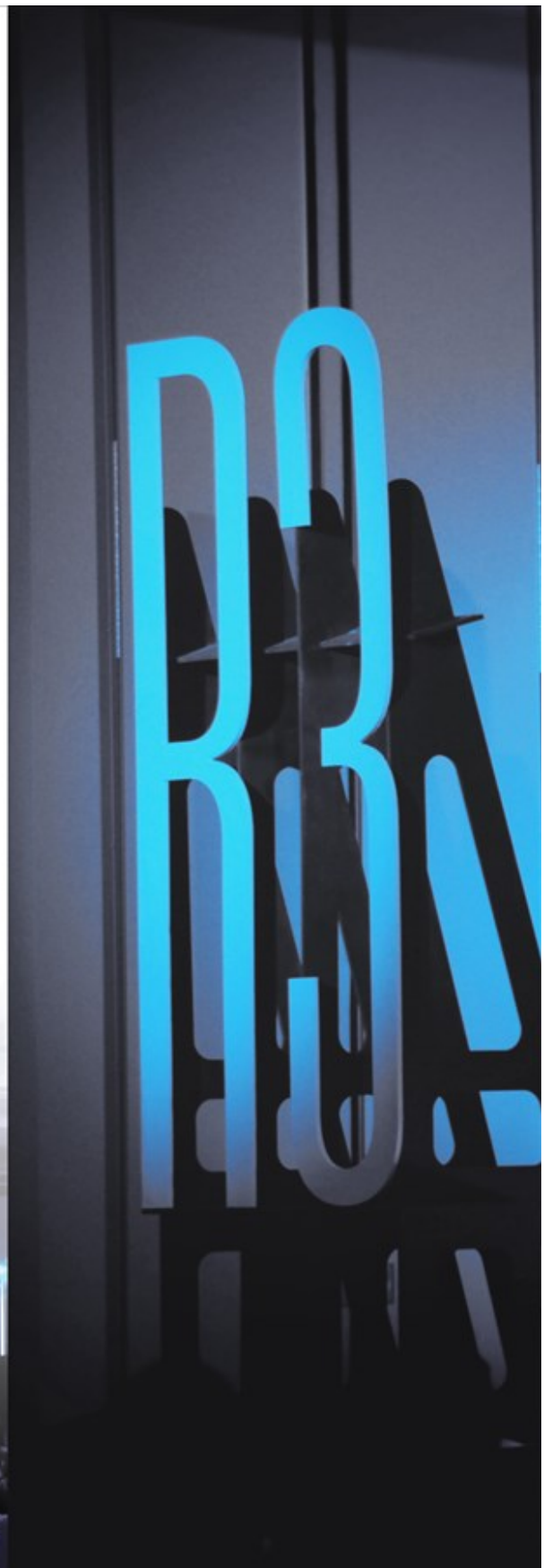
Over 400 researchers and business people gathered for NBIF's biennial presentation of the R3 Innovation Award for Excellence in Applied Research.

A keynote address by Saul Singer, co-author of the New York Times best-selling book, *Start-up Nation: The Story of Israel's Economic Miracle* demonstrated what New Brunswick can do to expand its innovation-based economy.

Visit our website or You Tube Channel to watch, or, if you're reading this on your digital device, click the video icon.



Watch Saul Singer's riveting keynote address





DR. RODNEY OUELLETTE
R3 INNOVATION AWARD
CANCER RESEARCH

Dr. Rodney Ouellette is the CEO and founder of the Atlantic Cancer Research Institute (ACRI).

From a team of one, Dr. Ouellette now oversees an organization of more than 30 staff and researchers. Through his leadership and collaboration, ACRI has developed and commercialized a new test for detecting cancer. Using a small amount of saliva, blood or urine, the test can tell if a patient has active cancer cells in their body in 30 minutes in their doctor's office.

Since then, they have discovered that the same technology can be adapted for a number of diseases. They are now in the process of developing a new device that, with one small sample, will be able to detect and report a variety of other illnesses as well.



DR. KEVIN ENGLEHART
R3 INNOVATION AWARD
MEDICAL DEVICES

Dr. Kevin Englehart is the director of the Institute for Biomedical Engineering at the University of New Brunswick.

Dr. Englehart's work has led to the development of hardware and software that allows people with artificial limbs to operate them using thought.

Most prosthetic hands can only perform open/close and turning movements. To work, patients have to learn how to isolate and move specific muscles in their arm to trigger movement.

From the hundreds of thousands of electrical impulses that the brain produces, he and his team developed technology that identifies which of those impulses cause movement, and then makes the prosthetic move.



DR. FELIPE CHIBANTE
R3 INNOVATION AWARD
NANOTECHNOLOGY

Dr. Felipe Chibante is the Currie Chair in Nanotechnology at the University of New Brunswick. After studying fullerenes with Dr. Richard Smalley, winner of the Nobel Prize in Chemistry for their study, Dr. Chibante has made them his life's work as well.

A fullerene is a carbon molecule that has revolutionized many industries from pharmaceuticals to power generation, and especially solar panels. With a cost of \$15,000 per kilo, they are its most expensive component. In 2013, Dr. Chibante invented a new method for making fullerenes for less than \$5,000 per kilogram, and eventually, \$150.

He is working on new polymers and fabrics that are inherently power generating, such as roof tiles, automobile body parts, curtains, clothes and more.



Watch our short documentary
on Dr Ouellette's work

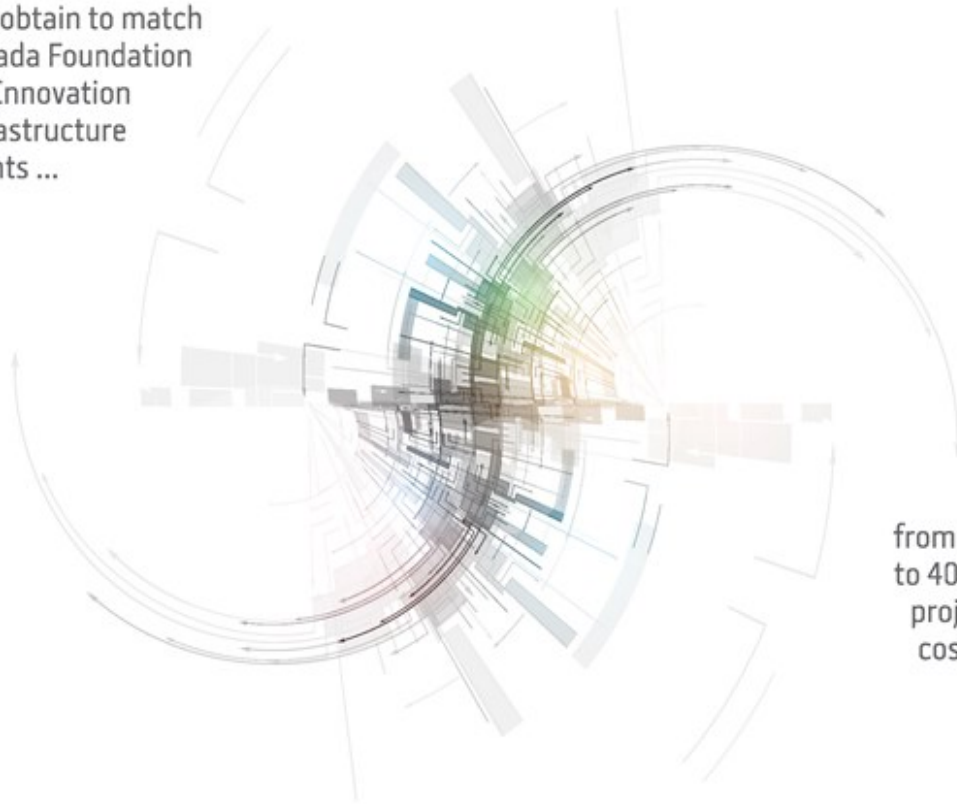


Watch our short documentary
on Dr Englehart's work



Watch our short documentary
on Dr Chibante's work

Last year, NBIF
doubled the
amount researchers
can obtain to match
Canada Foundation
for Innovation
infrastructure
grants ...



from 20%
to 40% of
project
costs.

OUR INVESTMENTS IN APPLIED RESEARCH



Since its inception in 2003, NBIF has invested \$21 million in applied research in New Brunswick, leveraging over \$149 million from other sources.

In order to obtain funding from NBIF, researchers and organizations work with our team to discover and identify funding

opportunities from other sources, from both the private and public sectors. This includes private corporations, federal agencies such as the Canada Foundation for Innovation, the Natural Sciences Research and Engineering Council (NSERC), the National Research Council (NRC) and Canadian Institute for Health Research (CIHR).

Our largest infrastructure investment was in **ACEnet**. As the province evolves its strategy with respect to a Big Data initiative, ACEnet is the sole provider of advanced-computing capacity in Atlantic Canada. ACEnet's infrastructure and user services are positioned to support current Big Data applications and is an integral part of their Major Science Initiative program.

NBIF also made additional investments in the research of **Dr. Sarah Eisler** at the University of New Brunswick. Current light harvesting technology is vastly inefficient, with commercial designs operating at anywhere between 10-20% conversion of light to energy.



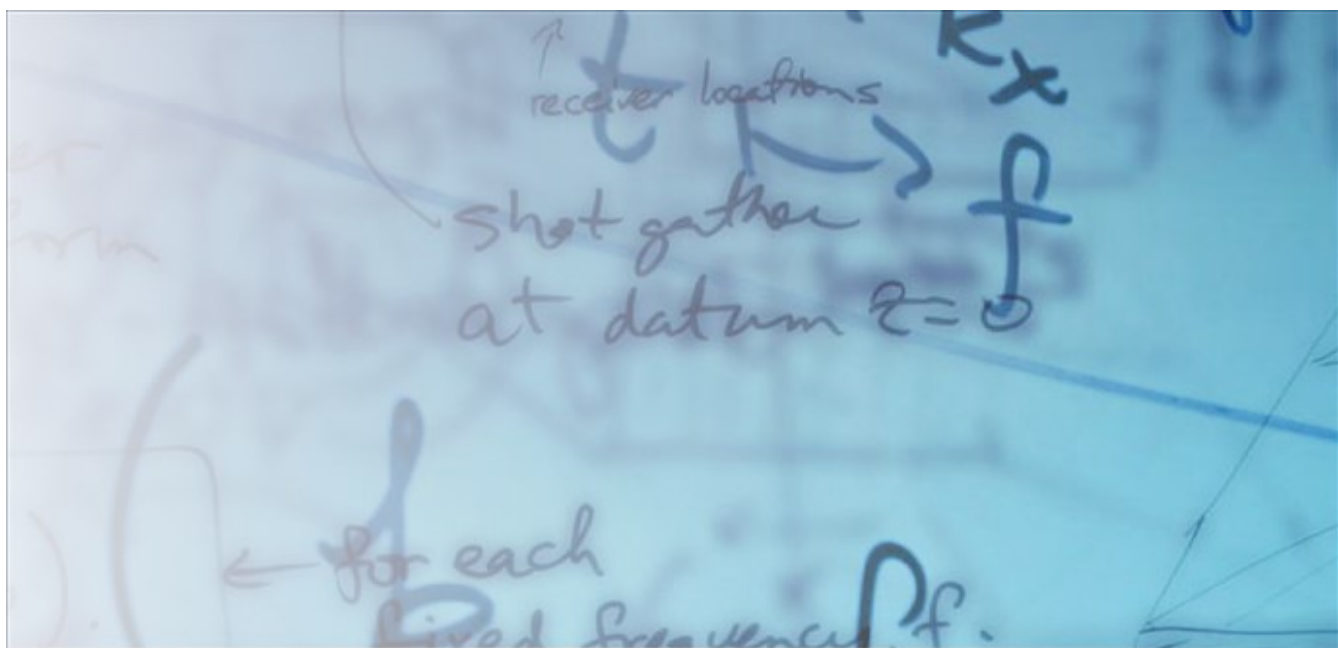
DR SARAH EISLER
MORE ENERGY FROM LIGHT
CAPACITY DEVELOPMENT
\$165,000

The work Dr. Eisler will be able to do with her new equipment and facilities will have strong implications for industries concerned with green sources of energy such as low-energy electronics, non-fossil fuel energy sources, and smart materials.

INNOVATION CAPACITY DEVELOPMENT

RESEARCH INNOVATION FUND Innovation Capacity Development 2013-14

Researcher	Org	Project	Investment
Virendra Bhavsar	UNB	Atlantic Computational Excellence Network Infrastructure (ACEnet)	\$ 830,985
Rodney Ouellette	ACRI	Lethality screen of tumor suppressor pathways for new therapeutics	600,000
Sylvain Poirier	CCNB	Atlantic Welding Technology Demonstration Centre infrastructure	282,025
Alain Simard	UdeM	Molecular targets for immune regulation using cholinergic receptors	233,691
Sarah Eisler	UNB	Materials characterization laboratory equipment and renovation	165,392
Matthew Litvak	MTA	Mobile and permanent fish reproduction laboratory and equipment	125,150
Luc Martin	UdeM	Molecular mechanisms laboratory infrastructure and equipment	88,072
Tyson MacCormack	MTA	Nanotoxicology research facility and equipment	81,082
Alain Doucet	CCNB	High performance gear box development equipment	8,313
TOTAL INVESTED, NBIF			\$ 2,414,710
Contributions from other sources			24,330,762
TOTAL IMPACT			\$ 26,745,472



In 2013-14 NBIF announced the creation of the New Brunswick Innovation Research Chairs. After undergoing a rigorous process, three chairs were chosen by committee to receive \$1 million in funding over five years to work with industry on high-value R&D projects that are strategically important to the New Brunswick economy.





DR. MARC SURETTE
INNOVATION RESEARCH CHAIR
BIOSCIENCES

Nutrition magazines and media personalities have been hailing the positive affect of omega-3 fatty acids on human health for several years, and the food and pharmaceutical industries have followed suit. Common sources of omega-3 fatty acids currently come from animals, and most predominantly fish. However, the increased use of omega-3s in food products, nutritional supplements, and new compounds for treating inflammatory and cardiovascular diseases, is pushing demand beyond supply. This has brought a number of issues to light, including the sustainability of the fishery, and the increasing presence of toxins, like mercury, in wild fish.

As the New Brunswick Innovation Research Chair in Omega-3 Fatty Acid Production, Dr. Surette will work in partnership with agricultural companies to develop crops of a specific plant that is rich in a new form of omega-3 fatty acids. This will open up new opportunities for farmers in New Brunswick and beyond to grow a new and potentially lucrative crop. Dr. Surette's aim is to work with industry to integrate these vegetable-based and sustainable fatty acids into their products.



DR. NATALIA STAKHANOVA
INNOVATION RESEARCH CHAIR
CYBER SECURITY

Despite our enormous achievements in computing, it is a matter of fact that no organization, regardless of size or wealth, is immune to cyber security threats. Industries, enterprises, and governments integrate their online systems with countless other organizations to meet the demands of doing business in the digital age.

As the New Brunswick Innovation Research Chair in Cyber Security, Dr. Stakhanova will lead the research and development of novel detection and response technologies for current, trending and anticipated cyber security threats, and facilitate the adoption of such technologies within the New Brunswick economy's five primary industries. When commercialized, Dr. Stakhanova's work is expected to significantly reduce the cyber security threat response costs of governments and industry. Since revenues generated through cyber security threat detection and mitigation services are expected to grow by 30 per cent over the next five years, her research results are expected to provide increased opportunities for the province's IT services sector as well.



DR. ERIK SCHEME
INNOVATION RESEARCH CHAIR
MEDICAL DEVICES

As technology advances, the demand for advanced wearable medical devices has seen a rapid increase in the past five years, including smart prosthetic hands and limbs, multi-monitoring devices for human physiology, and more recently, human augmentation technologies. As a result, the growth rate of the wearable medical device industry is expected to compound annually at a rate of 16 per cent and for multi-monitoring devices, 45%. In fact, the medical technology sector is expected to outperform pharmaceuticals by 2018.

As the New Brunswick Innovation Research Chair in Medical Devices and Technology, Dr. Scheme's mandate is to position New Brunswick as a world leader in the discovery, innovation and commercialization of medical devices and technologies. He will lead the growth of New Brunswick's emerging medical devices industry by making it a destination of choice for new and existing companies, entrepreneurs, and exceptional students. Working with a large internal team, and from other public and private organizations, Dr. Scheme's focus is to effectively put the results of their collective work into the hands of industry.

In 2013-14, 17 industrial partners contributed \$1.8 million alongside NBIF on applied research projects. \$27.5 million since 2003 including:



AV Birla Group	Innovatia
Bell Canada	Irving
B-Temia	Lockheed Martin
Corey Feed Mills	Lucent Technologies
Corridor Resources	McCain Foods
Fisher Scientific	NanoNB
Gentek	Nikon
Homarus	Plextronics
Husky	Randgold Reserves
IBM	Xtrata

EMERGING PROJECTS



In 2013-14, NBIF made nine new investments in emerging projects—innovation in its earliest stage. With positive results, researchers can obtain much larger funding to commercialize their research.

At NBIF, we like emerging projects because they are the seeds of innovation, and the starting point for ideas that can turn into commercial successes.

With specific results, a project with **Dr. Laura Romero-Zerón**, could lead to a number of commercial chemical formulations for the remediation of wax problems for the oil and gas industry. Her project, partially funded by NBIF and industrial partner **CORRIDOR RESOURCES**, aims to solve a difficult problem at the Caledonia oil field near Sussex: the remediation of significant wax deposition during production of light oil. The sticky wax builds up on well bore surfaces and production equipment causing severe detrimental effects on its oil production performance. Dr. Romero-Zerón's work may lead to the formulation of customized chemical treatments to solve the wax problem for Corridor Resources Inc. that might also be useful for the industry at large.

Alain Doucet, a researcher at CCNB Bathurst's Metal Fabrication Laboratory has a number of emerging projects underway for industry, each focused completely on technology for creating or improving products.

His current projects include the design and fabrication of a novel interior for New Brunswick-based **TIMBRE CASES'**



DR LAURA ROMERO-ZERÓN
REMOVING WAX FROM OIL
EMERGING PROJECT
\$15,000

luxury **MARTIN Dreadnought** guitar case. Further demonstrating the lab's versatility, he is also working on a new mechanism for existing heavy equipment that will allow the forestry industry to harvest timber on steep inclines in a more effective and efficient manner.

RESEARCH INNOVATION FUND Emerging Projects 2013-14

Researcher	Org	Project	Investment
Kevin Shiell	CCNB	High velocity scouring method for anaerobic membrane bioreactors	\$ 25,000
Kevin Shiell	CCNB	Fungal biomass production, extraction and production of chitosan	25,000
Ghislain Deslongchamps	UNB	Organocatalyst discovery via virtual screening and reverse-docking	25,000
Sébastien Plante	UMCS	High performance liquid chromatography equipment	25,000
Laura Romero-Zeron	UNB	Caledonia Field wax characterization and deposition mechanisms	15,000
Huining Xiao	UNB	Reinforced laminated veneer lumber using vulcanized fiber	15,000
Alain Doucet	CCNB	Aerial photography apparatus for unmanned aerial vehicles	9,000
Alain Doucet	CCNB	Mechanism for harvesting timber in steep inclined terrains	4,500
Alain Doucet	CCNB	Interior forms for dreadnought guitar cases	4,368
TOTAL INVESTED, NBIF			\$ 147,868
Contributions from other sources			254,452
TOTAL IMPACT			\$ 402,320



Since inception in 2003, NBIF has been a leader in health research investing \$5.2 million in 63 projects with 43 New Brunswick researchers, raising over \$40 million more from other funding agencies.

2013-14 saw our largest one-year investment in health research at a total of \$2 million, plus another \$2 million commitment to our research chairs over the next five years.

Dr. Slimane Belbraouet
Dr. Joe Biden
Dr. Geneviève Bouchard
Dr. Victoria Chester
Dr. David Clark
Dr. Denise Clark
Dr. Yahia Djaoued
Dr. David Flemming
Dr. Jacques Gagnon
Dr. Khashayar Ghandi
Dr. Anirban Ghosh
Dr. Odette Gould
Dr. Steven Griffiths
Dr. Habib Hamam
Dr. Bernard Hudgins
Dr. Shanthi Johnson
Dr. Michael Johnson
Dr. Usha Kuruganti
Dr. Peter Kyberd
Dr. Michelle Lafrance
Dr. Carol Lavigne
Dr. Stephen Lewis
Dr. Luc Martin
Dr. Chantal Matar
Dr. Chris McGibbon
Dr. Shawn McLellan
Dr. Pier Morin
Dr. Judee Onyskiw
Dr. Rodney Duelllette
Dr. Cheryl Patten
Dr. Darren Piercy
Dr. Sharwaite Ramsayak
Dr. Stacey Reading
Dr. France Rioux
Dr. Gilles Robichaud
Dr. Erik Scheme
Dr. Jon Sensinger
Dr. Alain Simard
Dr. Elliott Stollar
Dr. Marc Surette
Dr. Nadia Tchoukanova
Dr. Mohamed Touaibia
Dr. Sandra Turcotte
Dr. Andrew Hamilton-Wright

CONCEPT VALIDATION



In 2013-14, NBIF made five new investments in concept validation projects—innovation on the verge of commercialization. Ten of the companies in our portfolio were borne from research at a New Brunswick university.

At NBIF, our investments in concept validation are very wide-reaching, covering all of NBIF's strategic industries, including biosciences

and health research, from novel therapeutics and diagnostic tests to robotic mechanisms for the disabled.

Our largest investment for 2013-14 was for **Dr. Chris McGibbon** and the further development of industrial partner **B-TE-MIA's** Dermoskeleton. Dermoskeleton is a wearable low-profile robotic exoskeleton that provides active assistance for people with mobility problems, and in some cases, paralysis.

The outcome of Dr. McGibbon's and the Institute's work is expected to lead to B-Temia establishing manufacturing facilities in New Brunswick, creating a new industrial sector that will present new opportunities for engineers and technicians.

Given the expected global demand for robotic exoskeleton products in the next 20-30 years, New Brunswick has a unique opportunity to be a leader in this rapidly developing market.

Another health-related applied research project at the **Atlantic Cancer Research Institute** will lead the development of a new device that with a very small amount of any type of



DR CHRIS MCGIBBON
MAKING THE IMMOBILE MOVE
CONCEPT VALIDATION
\$500,000

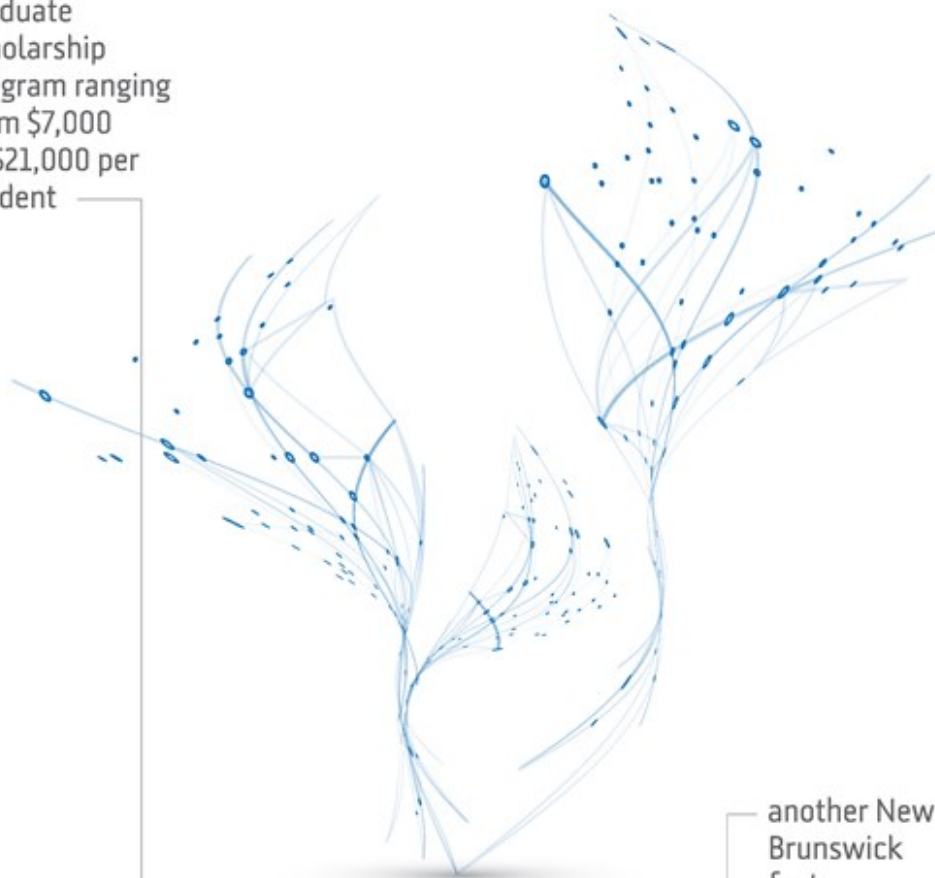
body fluid, will allow doctors to test patients for several types of disease at once, and quickly.

Led by **Dr. Anirban Ghosh** at the Atlantic Cancer Research Institute, the project aim is to develop a "lab on a chip" that, through channels smaller than a spider's web, splits and delivers the fluid to multiple points on the chip. Each point will test for a unique type of disease.

RESEARCH INNOVATION FUND Concept Validation 2013-14

Researcher	Org	Project	Investment
Chris McGibbon	UNB	Dermoskeleton technology for improving mobility in the disabled	\$ 500,000
Marc Surette	UdeM	Vegetable-based omega-3 for commercial production	300,000
S.A. Selouani	UdeM	Verbal, contextual, adaptive and intuitive translation technology	275,000
Anirban Ghosh	ACRI	Enricher lab on a chip for capture and analysis of microvessicles	190,000
Y.H. Chui	UNB	Development of a lumber-SCL massive timber panel product	53,000
TOTAL INVESTED, NBIF			\$ 1,318,000
Contributions from other sources			5,925,216
TOTAL IMPACT			\$ 7,243,216

In 2013-14, NBIF
launched the
first provincial
graduate
scholarship
program ranging
from \$7,000
to \$21,000 per
student



another New
Brunswick
first.

RESEARCH ASSISTANSHIPS



To promote and boost New Brunswick's position as a hotbed for Canadian innovation in Canada, NBIF launched a new graduate and doctoral scholarship.

Ranging between \$7,000 and \$21,000, the scholarships are designed to attract, train and retain the talent the province needs to feed its growing innovation-based economy.

These scholarships will help recruit and retain the best students and inspire them to seriously consider innovation as a career path.

Students must be undertaking studies in one of the STEM disciplines (science, technology, engineering and mathematics) or social innovation to qualify.

The scholarship tops up those issued by the Canadian Institutes of Health Research, the

Natural Sciences and Engineering Research Council and the Social Sciences and Humanities Research Council, known as the Tri-Council.

To be eligible, graduates must be studying a discipline related to social innovation or in one of the science, technology, engineering and mathematics fields, or STEM.

Last fiscal year, NBIF also contributed \$900,000 to fund 107 student research assistants at post-secondary and research institutions all over New Brunswick.

The aim of our **Research Assistantships Initiative** (RAI), is to provide researchers with the additional human resources they need to work on their projects while giving students some of the funding they need for their education. Graduate students can receive up to \$10,000 and undergraduates, \$5,000, plus valuable real-life experience.

The table below shows the number of RAIs awarded to professors and researchers in 2013-14 per post-secondary education or research organization in New Brunswick.

The fourth component of NBIF's talent recruitment funding, the **Research Technician Initiative** (RTI) was not awarded in 2013-14, as it is generally a biennial competition. Open to all publicly-funded research organizations in New Brunswick, the RTI provides researchers the funding they need to hire a full-time PhD-trained research technician to help expedite their projects. The next competition will be completed in the Winter of 2015.



AMY BROWN
RESEARCH ASSISTANT
MOUNT ALLISON

Amy Brown worked over the summer of 2013 with Dr. Vett Lloyd on cell cultures to determine the effectiveness of a peptide for delivering Taxol and Paclitaxol on cancer cells.

RESEARCH ASSISTANTSHIPS INITIATIVE by organization 03:31:2014

72 : UNB



25 : UDEM



04 : MTA




04 : IRZC



02 : NBCC



The background of the page is a complex, abstract composition of various geometric elements. It includes several large, semi-transparent grey polygons of different shapes and sizes, some of which are nested or overlapping. There are also thin, light grey lines that crisscross the page, some of which are curved. A prominent blue arrow points from the left towards the center, and a red arrow points from the right towards the center. In the bottom left corner, there is a dense, colorful pattern of overlapping lines and shapes in shades of orange, yellow, green, and blue, creating a sense of depth and movement. The overall effect is a modern, architectural, and somewhat futuristic aesthetic.

In 2013-14, NBIF doubled its maximum start-up grants for new professors to \$200,000 to help recruit extraordinary professors to the province. Funding can be used for lab set up and the acquisition of scientific equipment.

RECRUITING NEW RESEARCHERS



The best professors and researchers are often presented with multiple offers from several organizations. Our start-up grants for new professors helps our post-secondary institutions be more competitive when recruiting new research talent.

It's not just New Brunswickers that face cracked, pothole-riddled roads every spring and beyond. It's a problem that faces countries all over the world, and especially cold climates.

Dr. Ghassan Abou-Samra was recruited to the Université de Moncton in 2013 to continue his ground-breaking, or should we say ground-saving work here. When micro-cracks become larger, water infiltrates the pavement causing severe deterioration during the frost and thaw cycles of our Nordic climates.

His study of the dynamics of asphalt micro-cracks caused by persistent heavy vehicle traffic, simulations will be used to develop reinforced asphalt and to propose changes to the road building code. Dr. Abou-Samra's study is expected to lead to increases in the life span of roads. Dr. Abou-Samra is developing a new probe to measure the resistance of solid and various soil materials to determine their resistance. With this new probe, resistance can be measured at any depth the probe is driven. The new probe could have many applications for civil engineering, including quality control in metals such as steel.



DR GHASSAN ABOU-SAMRA
BUILDING BETTER ROADS
START-UP GRANT
\$50,000

In the same research stream, **Dr. Baaj Hassan** was awarded start-up funding upon hiring at the Université de Moncton. Dr. Hassan will be developing new energy-efficient methods for manufacturing both asphalt and Portland cement. Portland cement is the most common type of cement in general use around the world, used as a basic ingredient of concrete, mortar, stucco, and grout.

TALENT RECRUITMENT Startup Grants for New Professors 2013-14

Researcher	Org	Expertise	Investment
Deny Hamel	UdeM	Quantum and non-linear optics, quantum light manipulation	\$ 75,000
Jon Sensinger	UNB	Design and engineering of body-powered prosthetics	60,000
G. Abou-Samra	UdeM	Advanced road building materials and asphalt micro-cracks	50,000
Nicolas Lecomte	UdeM	Human-induced impact of polar and boreal forest ecosystems	50,000
TOTAL INVESTED, NBIF			\$ 235,000
Contributions from other sources			1,027,688
TOTAL IMPACT			\$ 1,262,688

\$500,000

**YOUR PITCH.
OUR SUPPORT.
YOUR DREAM.**

breakthru

NBIF STARTUP COMPETITION

DO YOU KNOW SOMEONE WHO IS READY TO BREAKTHRU?

Tell them to enter the New Brunswick Innovation Foundation's 2015 Breakthru Startup Competition for over \$500,000 in investments and professional services to start their own company. Maybe it's you.

TO ENTER, all you need to do is fill out the application form on our website, write a one page summary of your idea, and make a one-minute video pitch. Deadline for applications is **December 9, 2014**.

If you qualify, our Breakthru Boot Camps will show what you need to know to complete your business plan. Five finalists will be chosen, and three will win at:

BREAKTHRU LIVE 2015

MARCH 19, 2015
FREDERICTON CONVENTION CENTRE
http://nbif.ca/en/venture_capital/breakthru

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